



State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-3406 FAX (603) 271-7894



December 2, 2002
Letter of Deficiency
DAM #071.01 & #071.07

Mr. Brad Larrabee
University of New Hampshire
17 Leavitt Lane
Durham, NH 03824-3522

RE: Durham Reservoir Dam #071.01, Oyster Reservoir Dam #071.07, Durham

Dear Mr. Larrabee:

The Department of Environmental Services, Dam Bureau (DES) consistently strives to enhance the safety of dams in New Hampshire through its dam safety program. One of the many instruments that play a part in reaching this goal is our inspection program. DES is forwarding this correspondence to you to advise you that in accordance with RSA 482:12 and Env-Wr 502.02, an inspection of the subject dam was conducted on November 9, 1999 and October 9, 2002. During the visual inspections and/or file reviews, the following deficiencies were observed:

DAM #071.01 (refer to attached sketch)

1. There were wet areas noted in two locations: 25 feet to the left of the right abutment and 50 feet to the right of the spillway. These areas have been noted in the past as far back as 1982. It is suspected that there may be some leakage occurring around the old water supply mains whose gates and wooden gate boxes are visible on the surface, at the toe of the dam. The wet areas have expanded since the last inspection causing the entire toe of the dam in the vicinity of the old water mains to be wet;
2. There was brush along the upstream and downstream embankments;
3. The wooden rail fence running along both edges of the dam crest is leaning. This may be indicating slope movement;
4. A portion of the left upstream spillway-training wall had fallen into the spillway causing partial blockage of the primary outlet channel;
5. The downstream embankment of the dam is at a slope of greater than .5 making maintenance difficult;
6. There is no operation and maintenance plan (O&M); and
7. The emergency action plan (EAP) is in need of testing.

DES believes that the above deficiencies can be corrected by performing the following items by the indicated schedule:

December 31, 2002:

1. Submit a draft O&M plan. Refer to the enclosed guidelines;
2. Submit a copy of the recently updated EAP to DES and perform the annual testing of the EAP notification flowchart;
3. Remove the blockage in the upstream face of the spillway channel;
4. Remove brush from the upstream and downstream embankments of the dam, from along both sides of the spillway channel and from within 15' of the downstream toe of the downstream embankment;

September 30, 2003:

5. Submit to DES the results of an engineering assessment of the seepage noted at the toe of the dam to the right of the spillway. This study should include:
 - a. An investigation of the location and condition of the old water mains;
 - b. Design plans for remediation of the wet condition at the toe of the dam;
 - c. Design plans for regarding the downstream slope to a minimum of 2.5:1;
6. Monitor the areas of seepage and notify this office if the flow increases or sinkholes appear on the crest and downstream slope of the dam.

DAM #071.07 (refer to attached sketch)

1. There was brush along the right abutment and within the downstream spillway discharge channel.
2. There was concrete deterioration and cracking in the following locations:
 - a. Top of the right concrete abutment wall, at the corner with the spillway training wall and upstream cutoff wall;
 - b. Base of the right spillway-training wall adjacent to the spillway;
3. The flashboards on the spillway need replacement;
4. There is no operation and maintenance (O&M) plan; and
5. The emergency action plan (EAP) is in need of testing.

DES believes that the above deficiencies can be corrected by performing the following items by the indicated schedule:

December 31, 2002:

1. Submit a draft O&M plan. Refer to the enclosed guidelines;

2. Submit a copy of the recently updated EAP to DES and perform the annual testing of the EAP notification flowchart;
3. Remove brush along the right abutment and within the downstream spillway discharge channel

September 30, 2003:

4. Repair the minor concrete deterioration and cracking in the following locations:
 - a. Top of the right concrete abutment wall, at the corner of the spillway training wall and upstream cutoff wall;
 - b. Base of the right spillway-training wall adjacent to the spillway; and
5. Replace the flashboards on the spillway.

DES is requesting that you complete and submit the attached "Intent to Complete Repairs" form, within 30 days of receipt of this letter, that will provide for correction of the identified deficiencies by the date(s) indicated above. If you believe changes to the items of work or dates are necessary, please make the changes directly on the form and provide a brief explanation. We have enclosed a self addressed stamped envelope for you to return this form. You may consider contacting Jimmy Leung, P.E., of our Maintenance Section to determine if a maintenance or repair agreement can be established for DES to correct the identified deficiencies.

Our intent in sending you this correspondence is to make you aware of items that DES believes warrant your attention to insure the continued safe operation of your dam. It is our hope that, through the submittal of the attached form and a commitment to keeping a well-maintained dam, you will voluntarily comply with the requested items of work. If we do not receive the intent form or a similarly adequate written reply, we will assume that you are in agreement with our findings and recommendations and DES will carry out follow-up inspections accordingly.

If you have any questions or comments regarding this Letter of Deficiency or would like to be present at future inspections, please contact me at 271-3406, or write to the Water Division at the address listed on the top of the previous page.

Sincerely,

COPY
Grace E. Levergood

Grace E. Levergood, P.E.
Dam Safety Engineer

Attachments Guideline for an O&M plan, DB13

cc: Gretchen Rule

Town of Durham

Certified # 7000 1670 0000 0586 1094

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